3D of Gharb Aquifer. Use of GIS in the Cartography

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Groundwater is an important source of water supply and plays a crucial role in domestic, industrial and agricultural uses. The management of these resources represents nowadays a major stake for our future. This management makes call several data of land that it would agree to organize for an easy use. The implementation of solutions by the Geographical Information System permits a better perception of the set of the data facilitating the decision making and a bigger easiness to interpret and to criticize at a time. In fact, the GIS techniques facilitate integration and analysis of larges volumes of data, whereas field studies help to further validate results. Integrating all these approaches offers a better understanding of features controlling groundwater occurrences in porous medium.

In order to cartography the potentially aquiferous formations of the important hydrogeologic of the Gharb (NW Morocco), the GIS has been used to manage the data of over forty hundred boreholes distributed on the whole basin. Each borehole contains several information as boring log, it's width, aquifer and substratum levels, hydrodynamic parameters given by pumping tests, data sets for soil and water chemistry … Several thematic maps have been extracted of that data base, including several three-dimensional diagrams of the thickness of the potentially aquiferous formations: sandstone, calcarenite, sand,…. This result is a key in the evaluation of the hydrogeologic reserves of the basin and an important element in all numeric modelling studies.

The overall results demonstrate that the use of GIS Technology provide potentially powerful tool to study groundwater resources and design a suitable exploration plan, particularly in larger site.

Key Words: GIS, Cartography, Aquifer, 3D sedimentary model